

**Independent Review Panel
Thursday, September 25, 2003
Meeting Notes**

*Attending: Mary Fran Myers, Gilbert White, Scott Tucker,
Bob Harberg, Alan Taylor, Nancy Steinberger, Molly Tayer*

Introductions & Agenda review:

Mary Fran asked about Scott's participation. She indicated that, due to her absence, she was not aware he had been invited to join the IRP review for the Utility Master Plan update. Bob explained that he thought Scott added a good perspective on the Utility Plan as the co-contractor on many of the projects that the city will undertake. Mary Fran offered that she was encouraged by having a more regional perspective at the table and welcomed Scott.

Molly offered that the question was in no way offered as a challenge; but highlighted that we did not communicate the new membership across the group well.

Comprehensive Flood and Stormwater Master Plan - Floodplain Mapping and Floodplain Regulations

Alan Taylor walked the panel through the information compiled for the Mapping Studies key issues and recommendations.

The city was flown earlier this year and now has new aerial topographic photography with 1" contours, improving the available information for the mapping.

Why should we update the mapping?

For some of the creeks, it has been more than 15 years and the conditions of the city have changed quite a bit. FEMA generally requires a 6 to 12 year revision cycle.

Boulder has 13 major drainageways in the incorporated city; more than 15% of the city is in the floodplain.

? In the 100-year or 500-year floodplain?

A: The 100-year floodplain is approximately 15% of the city. If we use the parameters for the 500-year floodplain, this probably goes up to or above 25% of the city.

?: Is this information known, available?

A: Some of this information is already identified on the maps.

Currently, the mapping is on about a 15 year update schedule. Some of the creekways have been done or that are in-process and will be complete soon – so the schedule is not "fixed."

The cost of these studies generally runs from \$3,000 to \$10,000 per mile.
If you add on hydraulic analysis, can add up to \$
Add in new hydrology, and/or two-dimensional modeling - adds another 30 – 50 % of cost to the process.

Depending on the drainageway, these different applications may be valuable.

RECOMMEND: Floodplain mapping be done on a 10-year frequency.
Set-up a budget of \$200k per year. Work to get outside money to augment the city funds.

Alan then reviewed the recommended information regarding adding a risk assessment step to the re-mapping step. This would go beyond mapping the areas subject to flooding and begin to look more at the level of risk to life and property by anticipated levels of flooding inside of the floodplain.

Risk assessment would involve more analysis of the mapping results. We would look at individual areas and uses and perform a detailed assessment in all areas.

What would it take?
Incorporate the risk assessment in studies
Would add 10 – 30% to cost

This would help us –
Better define flooding problem
Risk in specific areas
Guide decisions for floodplain management expenditures
We would be able to define the problem overall – 1 time

Would allocate \$50k per year to do this.

IRP discussion: thoughts on the key issues identified?

? Do we agree with the recommendations provided thus far?

? Is the map based on future conditions?

A: Already do map for future conditions. We have been doing this in our work with the UDFCD for almost 30 years. Basically, the hydrology information is based on future land-use. This has been a long debate with FEMA. Can now publish land-use line in FEMA maps.

? Are the insurance map based on future conditions?

A: No. 2-maps – recent maps FEMA has adopted our maps to show future conditions. The hydrology – not perfect; imperfect science.

Bob Harberg: Not a big issue for Boulder. All of the “big water” we are looking for/at will come from the west. Not too many dramatic “unknowns.”

?: Re the funding recommendations – what do we do today?

A: Currently, we on average expend \$50k to \$100k per year. The recommendation puts us at \$250k total allocation each year.

?: Is this in addition to the current?

A: No. Total annual allocation.

Molly: Comment from the CRG group to look at front-loading some of the allocated monies to get caught up with all of the mapping studies that are many years out of date. What do IRP members think about this idea?

C: Sounds unrealistic.

Staff: We are actually getting caught up given some of the studies in process. Need to add-in and assess the recent studies. Also keep in mind that some floodplains have not changed much. Areas like South Boulder Creek are more critical.

?: The FEMA funding opportunities – any money to tap now...

A: FEMA mapping dollars available now for converting mapping to digital base. Not money for restudy.

Did receive \$125k from FEMA for the South Boulder work.

County received \$450k

All of the County FIRMS will be digital.

C: Regarding the 5 to 10 year remapping schedule. It seems that some of the maps will need to be redone and some may not need to be remapped – depends on the land-use. May want to fit this into a summary of what has been done, where we are, status today.

?: What does the risk assessment tell us? How do we do this?

A: Actually doing this in South Boulder. Can target what we need to know against known risks.

?: What is the validity of using the 100-year, are we moving toward the 500-year flood.

A: Yes. We have new mapping that provides the 500-year line. With new aerials, we can get to a new level of detail – more information.

?: Re: modeling technology – what do we get if we join the world of 2-D modeling? Add in new technology, add in cost. Caution against adding more cost for less benefit. Need to establish means for judgment for how and when to do it, also need to consider the technologies that are available in the public domain, and the technologies which are non-public. Purchasing the non-public adds costs.

?: Describe the 2-dimensional model?

A: Basically, when we map what we really want to do is know where the floodplain is and what risks are attached to this.

The main point of this work is to have good floodplain regulations to control future development.

Alan: we are going to learn a lot during the work in South Boulder. Only the second community in Colorado to use the 2-D modeling. It makes sense to use the 2-D information when there are a lot of indeterminate flow paths. In South Boulder, we will be using both 1-D and 2-D models. You can reasonably use 1-D when you are working in the channels – where all water goes same direction. Use the 2-D when you move over the bank or are working in areas where water goes multiple directions as it goes over land.

C: Need to consider that Boulder is already 95% built out. Over 400 structures are in the floodplain. One option of advanced modeling is the hydrograph: opportunity to run the storm through already developed areas and see the damages. When you do this, may find that the water attenuates.

More dynamic models tell us if there is a change to the peak.

Nancy: It does not make sense to put a lot of money into the full dynamic model, because there is no turbulence equation. We cannot tell what happens to the buildings in the way.

C: As I look at Boulder, I see so much development still being put into the 100-year floodplain. Look at 9th and Canyon.

A: We do have some new building going into the floodplain, but it is less dense than before, and it is all flood proofed- 2' freeboard.

MFM: The risk assessment is a great recommendation. Would rather see more dollars added to this effort. I would spend more dollars on this than added levels of modeling technology that may or may not produce benefits.

Scott: It is a question of funding available. Added level done in the master planning, but not at the level described here. Need to consider the cost/benefit analysis.

AT: Want to describe the flood in more detail so we can consider other approaches.

BH: We want the risk assessment process to pick up where the high hazard zone leaves off.

?: How does this add to the HH analysis?

A: Takes it to a new level. We have the GIS and database information to identify and assess hazard zones. Add into this newly identified areas of high depth or high hazard, look at character of buildings in zone.

C: This sounds like a logical extension to what you are already doing – adding a little more focus.

C: We learned during the Fourmile Canyon remapping that there are bottlenecks, there are areas where we identified different practices to apply – where maybe it makes more sense to floodproof the individual structures – rather than re-engineer the stream. This makes sense of you can apply these tools.

C: Still need to identify the level of risk. Need to address range of storm and look at the 500-year level.

AT: There may be occasions where there are areas where the 25-year storm creates high risk – depends upon the area. At the 500-year level storm, we may have to decide if it makes sense to do anything at all.

Scott: Helps you understand requirements for critical facilities.

GW: Have the data, across the country as a whole- highest level of damages are attributed to storms in excess of 500-year.

FLOODPLAIN REGULATIONS

Alan presented the overview and key issues in his power point outline.

Staff noted that Gilbert White's comments that the data and historic flooding information that strengthens our presentation of the 500-year hazard are added into the presentation and information. Need language to the effect that there is "in excess of 15% of city in the floodplain, more than 4000 structures subject to flooding."

Scott wanted to note that since the FIRM went into effect; since the inception of the UDFCD, the number of addresses in the 100-year floodplain has decreased – or at least in some areas stabilized. Mary Fran asked for clarification regarding properties that are elevated or floodproofed; those that would have gotten a LOMR. Are these included in the count? Scott indicated that they were.

Bob Harberg spoke to the newly developed communities who have been able to create significant set-asides for floodways. He said that Highlands Ranch has amazing wide-open floodways incorporated into the original flood planning. In some cases, they were able to use streets and create culverts in the streets to be floodways.

?: Still a concern for recent development in Boulder – why is the new hospital in the floodplain?

A: There was an elevation process and a LOMR to remove the hospital site from the 500-year floodplain.

C: Still a continued concern. I have no confidence in processes where we simply move a line on a map. I do not know why we in Boulder keep allowing this to happen in our development.

BH: We have a lot of problems with land in our community where there is a use-by-right on the land.

C: If we were to look at the comprehensive plan and add in all known floodways, I would like to see no new development on whatever little bit of floodplain land there is left.

AT: I hope that as we promote new regulations, we can look at categorizing the effort as “not what would be most restrictive, but what would be most intelligent for Boulder’s future.”

Question still exists – do revised regs imply higher costs?

(See slide: How should regs be revised?)

?: Do our current regulations enable people to build in the floodplain – encourage ppl to build?

Scott: All structures?

A: New and substantially improved structures.

Floodplain Zoning:

Expand floodplain protection to 500-year;

Or, add new buffer zone to the 100-year to increase protection.

Look at protecting to the 100-year and adding 1 to 2’ of required freeboard/buffer. In some areas that would get us near the 500-year protection level. For example – at the hotel at 9th and Canyon- difference between the 100 year and the 500 year is about 3 feet. At the hospital, it is closer to 18 inches.

?: What about an escape route for the hospital? Where is there an egress/ingress that will not be underwater?

A: You go out to Arapahoe, go east to 55th and go north.

?: I have a question about the “lower zoning density overlay?”

A: Floodplains are a zoning overlay. The floodplain maps were not in existence when original land use maps were created. All floodplain information is set up as an overlay.

C: This overlay zone should influence the underlying zoning.

AT: We are also looking at encouraging density clustering on sites – to move the building allowed to areas of the property where it will be unaffected by a flood. Also suggesting the use of Transferable Development Rights (TDR's) where we would allow people to take their allowed building and move it to a receiving site that is not in the floodplain.

We also would like to prohibit encroachments in the riparian and wetlands areas. Encourage and adopt floodplain setbacks for these areas to encourage preservation. Give some added space from the stream corridor.

?: These regulations have been designed for the 15% of our floodplain that has not been developed. How much of the 500-year floodplain would there be, if we were to look at this map?

BH: In the background materials, I think we said there is approx. 8000 acres in the 100 year. This looks more like 15,000 acres in the 500-year – almost doubles. Much of this land is already developed. Need to pull out how much of the land is developed- and how much is open.

?: How much of the land could be receiving for TDR's- How many structures are there.

A: Probably 3,800 structures. In the 500-year perhaps 5300 structures. Some of the area in this analysis may not be in the incorporated city. We may be looking at the perimeters and some open lands.

BH: By promoting TDR's, we run into the anti-density arguments. Boulder citizens do not want added density. Not a popular or very successful tool as yet.

AT: we do not know how viable the TDR tool may be. We are working to package suggestions to address options to consider enabling us to add flood protection standards.

500-year = 2' of freeboard.

C: You should also add a flood protection access requirement to the critical facilities requirements.

NS: The FEMA requirements for floodproofing- can COB incentivize the practice of retrofitting for floodproofing? Can we get property owners to voluntarily add two-feet of protection?

AT: Need to research this.

BH: Need greater consistency in applying these regulations between the city and county. We have seen a lot of development with no added protection in the county, have lots of non-conforming properties due to the County allowing a 1' freeboard.

BH: I would like us to think about the regulations materials to be forwarded to the master plan. I think perhaps we are working with too big of a list.

?: Which of the items on the list have the most appeal, or would have the biggest band for the buck

MF: In North Dakota – the floodproofed basement regulations were born. If FEMA won't buy your reg- can't do it. The floodproofed basements are bad policy – does not work.

Remapping concerning because once the remap is some years old, people forget what the conditions were before – pretty soon – push against the already adjusted regs.

AT: I thought the foolproof basements would be a good option for some of the properties in Fourmile where we have really shallow sheet flooding. Some added relief for those properties that have already been platted in that zone.

AT: Opinion new floodplain regs are in line with proposed master plan.

BH: Can flesh out map as we work. Decide which of these we want to pursue and do analysis on ideas ppl want to see before we build regs. CRG asked to see costs and other data to justify this: cost to individuals, city....

Scott: What elected officials will think of this? Most not comfortable with this and will want to make this acceptable.

AT: Can look at phasing in various options – layout issues to consider in steps.

BH: Critical that as we look at the 500-year, we have opportunity and time for Council to weigh in.

?: How do we incorporate the WQ issues in the floodplain mgmt goals? Need to see that these are integrated- riparian habitat – assure this gets into the master plan.

C: I have a concern that the floodplain is only an “overlay” zoning tool. The whole mobile home park opened up this concern –

We face critical discussion of land use – how to get affordable housing, how to deal with transportation needs – if we go up against those and try to impose higher level of zoning – we will lose.

When we look at property values, we have seen that the County assessor does not consider flood hazard in property values. Does not affect property values.

S Randall: I would like to get the IRP to weigh in on what you would consider to be the top five items on this list to package and promote.

BH: Would like comments on this TM and these key issues in next 30 days.

GW: I would argue that PI, education and follow up with properties in the floodplain each year to see what they have for action and safety planning – would be the first priority.

In next three weeks: IRP members to have a separate meeting and assure other members are present. Discuss among themselves the top priorities for mapping and regulations.

What would be most worthwhile to push and assure gets adopted/included in the master plan?

Scot T: It is still a big community thing. Community needs to wrestle with this and assure the community values will support what it is you need to do. Why are you looking at the 500-year? Is the administration pushing this?

AT: No, Gilberts work and the national data support this. Perhaps though, it is better that we not get caught up in a frequency level. Maybe another way to describe hazards and protection? Comment about “arbitrary standards” received from the CRG.

BH: I do not know if the 500-year is politically saleable.

Fourmile:

Nancy- contract with Love is finalized. We opted to go with your advice and use the 1-D model and the new mapping. Move this process a little quicker. Should have new map by January.

What is next?

Molly will work with the IRP to set up a meeting of panel members, without staff and bring that information back to the staff for next review. Group to meet sometime in next three weeks.

Next TM review: Scott said that public education and involvement needs to be considered. Last week of October would be staff choice for scheduling to keep this process on track.

BH – plan to go to WRAB in November to give them an update. Work on draft plan across holidays – end of year. Start working toward other public outreach and educate the new City Council in February and March.

End.